#4 Amend 3673 JB 5/14/03

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Art Unit 3673, Application No. 09/751,264
Examiner: Mr. Frederick L.Lagman

The following changes and comments are submitted in response to Office Action dated April 14, 2003:

1. The applicant appreciates the Examiner's advice under Office Action item 1 and accordingly revises claims 1-4 to a) delete "from claim 1" references from claims 2-4, and b) add text, shown bold and italicized, to claims 1-3 with explanations to follow.

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1. A floating platform comprising:
a superstructure; a minimized wave-zone buoyancy structure; and a substructure;
with said minimized wave-zone buoyancy structure having a low cross sectional area;
with the minimized wave-zone buoyancy structure having sufficient height to range over ocean waves;
with said substructure ***alone*** effective in providing buoyancy and stability;
with the substructure having space to allow piping access to ocean bottom; and with the minimized wave-zone buoyancy structure effective in transmitting said superstructure's weight to the substructure.

2. A floating platform according to claim 1, further comprising one or more ***live load*** stabilizers, with said ***live load*** stabilizer or stabilizers attached to said minimized wave-zone buoyancy structure ***at a region from slightly above water level to slightly below water level*** and effective in providing buoyancy lift.

3. A floating platform according to claim 1, further comprising:
one or more ***floating*** stabilizers; and limited-free-movement means;
with said ***floating*** stabilizer or stabilizers effective in providing buoyancy lift;
with the ***floating*** stabilizer or stabilizers attached to said floating platform ***from above said substructure*** by said limited-free-movement means; ***and***
with the floating stabilizer or stabilizers floating at water level when the limited-free-movement means is slack and not engaged.

4. A floating platform according to claim 1, further comprising limited-free-movement means, with said floating platform anchored to ocean bottom by said limited-free-movement means.

2. Response to Office Action item 3.
Howard maintained stability by connecting a storage tank to an ocean floor surface casing with a conduit, column 2, lines 39-41. Said conduit essentially transformed said storage tank into a tension leg structure. As Howard never anticipated for the storage tank to remain as a free floating structure, a top-heavy helicopter landing area would cause the entire storage tank to overturn had it not been for the presence of the conduit. Figure 1 of the current invention and claim 1 above do not rely on any conduit for stability. MWB floats freely and maintains stability by itself.

The applicant hopes the above argument is persuasive to overcome Howard; however, if it is judged not to be the case, the following is added. Howard contemplated an invention that handled 15,000 bbl. capacity or 10 days' producing capacity, column 3, lines 67 & 68. To differentiate from prior art, the applicant claims substructures with volumes in excess of 15,000 bbl. by inserting the following line

with the substructure having a volume of at least 15,000 bbls;

after the sixth line of claim 1 as revised above.

3. Response to Office Action item 5.
Johnson et al. contemplated horizontal plate damping action, corresponding to the CV term of applicant's differential equation. The plate increases the C coefficient, which raises the velocity-dependent drag. On the other hand, the current patent application envisages the stabilizers as floatation devices solely to inhibit large platform draught changes due to variations in live loads on the structure. Thus, the stabilizers redefine the K term of said differential equation, changing it to a more complicated form of variable coefficient. In addition, claim 2 is revised above to state live load stabilizers and to locate said live load stabilizers near water level for further differentiation of current invention from prior art.

4. Response to Office Action item 6.
White et al. restrained platform horizontal movement with mooring lines, which due to gravity have a mathematically defined shape called catenary, column 8, line 54. Although funicular structures are strong for certain uses such as suspension bridges, they offer elastic and flexible restraints in anchor applications—the process is much like flying kites under water. A mooring line can generate increasing resistance to lateral platform forces by changing its shape, or curvature, with net elongation. That is the reason why White et al. adjusted by means of pulley and winches to horizontally position or maintain station of the floating structure, column 8, lines 57-59. White et al. further employed continuously engaging buoyancy means, which had the effect of increasing lateral stiffness while decreasing the mooring lines' vertical impact. On the other hand for the present invention, floating stabilizers act only on the K coefficient as describe previously for purpose of live load stabilization after the MWB has sunk a predetermined depth. In addition, claim 3 is revised above to state live load stabilizers and to locate said live load stabilizers at water level above the substructure for further differentiation of current invention from prior art,

5. Response to Office Action item 7.

Fink et al. employed the shape of a major spherical zone, column 9, lines 45 and 46, which is a substructure characteristic not required by MWB. In addition, claim 1 is revised above to include space to allow piping access to ocean bottom for further differentiation of current invention from prior art, which did not provide piping access through said spherical zone.

Gerwick Jr. used cones to break up ice, meaning that the narrow section of the prior invention did not extend beyond the wave zone, although there may not be any waves when the ocean is covered with ice. Claim 1 is revised above to define said minimized wave-zone buoyancy structure with sufficient height so ocean waves by design would impact only this part of the platform.

Monnereau et al. treated stabilizing discs as damping devices, column 3, lines 54-57, which act on the CV term of applicant's differential equation. For the same arguments made in item 3 above in response to Johnson et al., the current live load stabilizers redefine the K coefficient of said differential equation.

Blevins et al. expected horizontal plates to increase the structure's effective mass, column 3, lines 25-28. Horton III envisioned water trapped by plates to give additional mass, column 2, lines 38-40. Applicant sees the effects of Blevins et al. and Horton III to be same as Johnson et al. and Monnereau et al., that their components increased the velocity dependent damping. The applicant is incredulous of such assertions of mass increase, which is doubtful upon consideration of principal of virtual work and small platform displacements. At the extreme of cyclic movement with velocity going from positive to zero and then to negative, it is hard to see how the effective mass is carried from one direction to the other. So clearly the effect is damping. In any event, the mass claims by Blevins et al. and by Horton III indicate that these inventors had contemplated only the MA part of applicant's differential equation. The current usage of live load stabilizers to custom design a K that varies with height is an outcome not anticipated in the prior art.

The applicant hopes the above presentation has been sufficiently clear and has adequately addressed the Office Action objections.

Sincerely,

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